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SELECTING U.S.R.O.P. CANDIDATES

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With the increasing cost of feed, labor, and equipment to sustain commercial flocks, it is more important than ever to improve the efficiency of production. Improved breeding is one sure means of increasing efficiency. We need a greater number of strains that will produce 200 or more eggs on a hen-housed basis. Some USROP breeders have already developed such strains. Other breeders of equal skill can do the same. The USROP breeder is, therefore, in a position to continue to be a key figure in the poultry industry.

The proper selection of pullets to be trapnested is one of the most important steps in the poultry breeding program. Carefully selected nonpedigreed candidates may produce as well as pedigreed candidates. A good number may qualify as USROP females, but the record of nonpedigreed candidates cannot be used in evaluating the breeding quality of their sires and dams. Therefore, it is of primary importance to trapnest pedigreed candidates.

Most breeders now realize the importance of progeny testing and selection on a family basis. Important economic characters such as egg production, livability, growth, hatchability, etc., are highly influenced by environmental factors, hence it is necessary to obtain more accurate information than that available from individual records. In selecting pedigreed pullets for USROP candidates that it is imperative first consideration be given to having a representative sample from each promising family. By representative sample, we mean that the pullets entered as candidates should be representative of all the daughters of the family for the performance factors that are to be measured by trapnesting. Any culling for factors that are directly correlated with the factors to be measured will interfere with the accuracy of the sample.

The main need of trapnesting pullets is to measure rate of production, pause and the quality of the eggs produced by a family. The daughters entered should be a representative sample for measuring these factors. (Any effort of the breeder to increase his qualifying percentage at the expense of his breeding program for advertising purposes will ultimately work to his detriment.) If the late-maturing daughters are not entered, the family averages will be inaccurate, since there is a significant negative correlation between sexual maturity and annual egg production. There is also a high correlation between the weight of the first few eggs laid by a pullet and her annual average egg weight, so if some of the daughters are rejected because of low egg weight, the family average is affected. The candidates may be culled for such factors as side sprigs, stubs, and

variation in plumage color that are in no way correlated with the major factors without affecting the accuracy of the sample. The reason for any culling should be clearly recorded on the family record. Eliminating one or two birds for side sprigs will not affect the sample in measuring rate of production, but it is important to have a record of the fact that side sprigs occurred in the family.

If poorly developed and diseased birds are culled before the sample is selected, the average performance of the family is materially affected but such culling usually is necessary from a practical standpoint. Notations regarding culling, deaths and other observations should be made regarding each family and such information should be given due consideration in selecting the birds on a family basis. If diseased or poorly developed birds are trapnested, the performance obtained is not representative of the genes that the birds may carry for egg production, egg size, etc.

Livability can be measured on pedigreed birds without trapnesting. It is a simple matter to record the wing-band numbers of all birds that die. Breeders often use a board similar to a banding board, with a nail driven part-way in the board for each dam, to provide a space for holding the wing bands from all dead birds. This can readily be done when the identification number of the wing band includes the dam's number. Freedom from broodiness is another factor that can be measured without the use of the trapnest. Other factors that can be measured less accurately are sexual maturity and persistency.

The number of pullets that a breeder should officially trapnest depends upon several factors, some of which are as follows:

(1) Number of good pedigreed pullets on hand
(2) Housing and trapnesting facilities
(3) Available labor
(4) Number of sires to be family tested
(5) Number of dams to be family tested
(6) Size of family considered significant

At least ten USROP breeding pens are desirable. If the males are replaced with ten other males at the middle of the breeding season, a total of 20 can be used. More than one-half of these should have 30 or more daughters from dams that also had satisfactory progeny test records for hatchability, livability, rate of feathering, rate of growth, family size, etc. This would give more than 300 desirable USROP candidates. However, it is to be questioned whether the minimum number of candidates should not be much larger in order to have as much selection pressure as possible on a sire family basis.

The daughters entered from a sire should be from at least four dams no more closely related than first cousins. This gives a more reliable measure for comparing the progeny test records of the sires. Of course, more information would be obtained if the pedigreed daughters were entered as candidates from all of the sires mated. Such additional information may not be of sufficient value to compensate for the labor.

Eight or more representative daughters should be entered as candidates from each dam. If a dam has less than five daughters or if her

chicks failed to hatch, grow, feather, and live satisfactorily, it is questionable if there is any value to entering her daughters as candidates.

Of course, most breeders now recognize the fact that efficient progeny testing and family selection requires that the daughters trapped be representative of all those produced from their sires as well as their dams. Although they accept this in principle, many breeders do not apply it conscientiously to their breeding program. Sometimes there is so much selection of the candidates for the official entry that very little of the variability obtained in breeding performance is due to genetic differences. The problem may be affected more now since the breeders are permitted to do more preliminary trapnesting for official entry. The USROP regulations (Misc.Pub. 300) now provides that:

(a) Preliminary trapnesting of all birds may be permitted during the first 30 day period.

(b) An additional preliminary trapnesting period of pedigreed candidates for three calendar months may be permitted to allow more time to select and enter candidates on a family basis; however, if a pedigreed candidate is continued in USROP all her full sisters trapnested beyond the 30-day period as candidates for USROP must be considered as having been entered.

This provision if generally followed will result in inaccurate progeny tests. The dams progeny test may be affected by the daughters of certain dams being culled more severely than other dams during the first 30 days. The sires progeny test is much more likely to be affected since one is permitted to cull daughters of sire families for a 30-day period and cull full sister groups for an additional three month period. A study of progeny records of USROP breeders showed that progeny testing sires was much more accurate than progeny testing dams. This has been confirmed by additional research at a State experiment station. This accuracy will not be obtained if the USROP breeders eliminate individuals and sister families carelessly.

Summary and conclusion

(1) Summarize the records obtained during the incubation, brooding, and rearing periods.

(2) Trapnest officially at least 30 daughters from each of the sires with satisfactory progeny test records during these periods.

(3) Trapnest at least 8 daughters from each dam. If a dam does not have 8 daughters, due to excessive USROP sales, the number may be safely reduced to 5.

(4) Trapnest <u>all</u> daughters from progeny tested sires and dams that have proved their breeding value.

(5) Officially enter a representative sample for the factors to be measured by trapnesting. Culling for late sexual

maturity, slow rate of production, poor egg quality, etc., should be kept at a minimum and considered in the future rating of families.

(6) Trapnesting is not necessary to measure livability - merely keep a record of the birds that die.

(7) Officially enter only birds that are representative of the breed and variety for breed characters and free from standard disqualifications.

(8) Make a record of the reason every pedigreed bird was rejected and give each notation due consideration in summarizing the sib and progeny test record for each family,